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# **US Federal Agency Large Scale Networking Research Programs**

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## FY 2001 IT R&D Implementation Plan

Large Scale Networking (LSN) including Next Generation Internet (NGI) Budget by Program Activity (Dollars in Millions)

Agency	Program Activity	FY 2000				FY 2001
		HPCC		IT 2		IT R&D
		Request	Estimate	Request	Estimate	Request
<b>NSF</b>	Advanced Networking Infrastructure and Research	60.78	60.92			64.77
	Applications	7.6	5.1			5.1
	Computing-Communications Research					1.42
	Experimental and Integrative Activities	6	0.92			0.92
	Information and Intelligent Systems	2				
	Information Technology Research			32	14.26	38.99
<b>NSF Totals</b>		<b>76.38</b>	<b>66.94</b>	<b>32</b>	<b>14.26</b>	<b>111.2</b>
<b>DARPA</b>	Gigabyte Applications					14.8
	Information Assurance and Survivability	0.5	0.497			13
	Networking	34.2	32.895			28
	Next Generation Internet	40	36.473			15
	Software for Autonomous Systems					14.5
<b>DARPA Totals</b>		<b>74.7</b>	<b>69.865</b>			<b>85.3</b>
<b>NASA</b>	NREN	10.4	10.1			9.5
	NREN-NGI	10	10			10
<b>NASA Totals</b>		<b>20.4</b>	<b>20.1</b>			<b>19.5</b>
<b>NIH*</b>	CIT - High Performance Biomedical Computing and Com	2.5	2.5			2.5
	NCI - Biomedical Computing Center	1.574	1.574			1.7
	NCRR - Biomolecular Computing	0.5	0.5			0.5
	NCRR - Modeling/Simulation	0.5	0.5			0.5
	NCRR - Virtual Reality /Environments	8	8			8
	NLM - Biotechnology Informatics	8.44	8.64			8.19
	NLM - Electronic Imaging	2.39	3.19			3.04
	NLM - HPCC Health Care Applications	17.06	18.64			17.31
	NLM - HPCC Training Grants	4.54	8.04			3.41
	NLM - IAIMS grants	2.99	2.99			2.23
	NLM - Intelligent Agent DB searching	19.55	19.63			16.79
	NLM - Medical Connections Program	1.25	1.38			1.44
<b>NIH Totals</b>		<b>69.294</b>	<b>75.584</b>			<b>65.61</b>

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DOE Office of Science	ESnet	14.79	15.75			20.3
	Networks & Communications Research	4.5	6			7.5
	Next Generation Internet	14.6				
	SBIR/STTR	4.5	3			4.2
<b>DOE Office of Science Totals</b>		<b>38.39</b>	<b>24.75</b>			<b>32</b>
NSA	Very High Speed Networking	1.72	1.72			1.9
<b>NSA Totals</b>		<b>1.72</b>	<b>1.72</b>			<b>1.9</b>
NIST	Information Technology Metrology, Testing and Applications	3.2	3.2			4.2
	Systems Integration for Manufacturing Applications	2	2			
<b>NIST Totals</b>		<b>5.2</b>	<b>5.2</b>			<b>4.2</b>
NOAA	Networking Connectivity	2.7	2.7			2.7
<b>NOAA Totals</b>		<b>2.7</b>	<b>2.7</b>			<b>2.7</b>
AHRQ	Computer-based Patient Records	2.6	1.8			3.7
	Information Technology	2.6	1.9			3.7
<b>AHRQ Totals</b>		<b>5.2</b>	<b>3.7</b>			<b>7.4</b>
OSD/URI	Information Technology Research Initiatives			4	4.00	4
<b>OSD/URI Totals</b>				<b>4</b>	<b>4</b>	<b>4</b>
<b>Grand Totals</b>		<b>293.984</b>	<b>270.559</b>	<b>36</b>	<b>18.26</b>	<b>333.81</b>

# **Incremental LSN Research Programs 2002-2004**

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## **(SII) Scalable Information Infrastructure Initiative**

- Proposed new research initiative starting in 2002 as successor to Next Generation Internet Initiative.
- Nine agencies have participated in planning this initiative, including a two-day workshop held in June. Draft concept paper has been prepared, including goals, budget, agency interests and roles, and benefits.
- Major theme: how to enable secure, reliable applications in the future Internet with vast expansion in number and types of devices, network capabilities, and services.
- Initiative has three goals.

# **Incremental LSN Research Programs 2002-2004**

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## **SII Goal 1: Enabling Applications**

- Application adaptation to network conditions
- Network signaling to applications and middleware
- Remote computing with variable bandwidth
- Distributed computing
- Command and control
- Data distribution
- Visualization
- Collaboration
- Security/protection of data

# Incremental LSN Research Programs 2002-2004

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## SII Goal 2: Network Services

- Preferred Services (expansion of Quality of Service)
- Seamless services: anywhere, anytime, securely
- Discovery services
- Adaptive services
- Network architecture
  - Automated discovery and configuration
  - Multi domain testbeds
- Network technology
  - Network traffic engineering, e.g. for billions of devices
  - Mobile (wireless) and heterogeneous
  - Optical networking
  - Deeply connected
  - End-to-End bandwidth (Gb+)
  - Network signaling/feedback
  - Dynamic traffic engineering
  - Network simulation methodology

# **Incremental LSN Research Programs 2002-2004**

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## **SII Goal 3: Network Security/Scalable security**

- Scaling issues of PKI
- Security implications of self-organizing networks
- Security in heterogeneous environments

# SII Schedule

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- FY 2001: Planning for SII: Public workshops
- FY 2002: Joint Government-Industry-University Planning for SII, transition from NGI to SII
- FY 2003-2007 Joint Government-Industry-University SII Research and Evaluation



# SII Incremental Funding

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- FY 2002: \$50 Million
- FY 2003: \$150 Million (Includes former NGI funding that finishes in FY 2002)
- FY 2004: \$200 Million
- FY2005-2007: \$200 Million/year (SII is a five year program)

# Agencies Interested in SII R&D

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- SII: Goal 1: DARPA, DOE, NIH, NOAA, NSF
- SII: Goal 2: DARPA, DOE, NASA, NIH, NOAA, NSA, NSF
- SII: Goal 3: DARPA, DOE, NASA, NIST, NSF